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The Associations Between Social, Behavioral, and Health Risk Factors on a High School
Student's Decision to Pursue Post High-School Plans

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Abstract

Background: Due to the relationship between SES and health, pursuing post high-school plans can lead to better future health outcomes for the student. The current paper assesses how behavioral and health risk factors, and family and social support, effect a student's decision to pursue post high school plans.

Methods: Data from the Youth Behavioral Component of the 2007 Connecticut School Health Survey were analyzed. Composite measures of exposure to/participation in violent behavior, mental and physical health, family/social support and substance abuse were created. The effects of these domains on the decision to pursue post high-school plans were assessed using logistic regression. Data were stratified by socioeconomic status.

Results: Low SES students were more likely than high SES students to be doubtful for post high-school plans. Cocaine abuse emerged as the risk factor that put low SES students at the highest odds of not pursuing post high-school plans, followed by involvement in violent/aggressive behavior, and receiving less family/social support than their peers. Similar findings regarding violence and family/social support were found in the high SES group. Findings regarding substance abuse in the high SES group were not statistically significant.

Discussion: Prevention programs regarding violence and substance abuse may have the added benefit of increasing the likelihood that high school students will make post high school plans. Preventing cocaine use among low SES students may be of particular importance. Violence prevention measures should be tailored to the target group. Adequate family/social support emerged as an encouraging factor for post high school plans.

Introduction:

The decision to pursue post high school plans is a resolution with great implications for a high school student's future. By augmenting their high school education with post-secondary education and/or training, students can improve two major components of their future socioeconomic status (SES): educational status and earning potential. In 2005, the full-time worker with a four-year college degree earned 62% more than the typical full-time worker with only a high school diploma. This trend holds true, though the disparity is not as large, when comparing individuals with some college education versus high school graduates with no college experience (1). Due to the association between low SES and increased morbidity and mortality, students who pursue post high school plans are placing themselves on a better trajectory for their future health. Understanding why some students choose not to pursue post high school plans can help guide interventions in these areas, thus increasing the likelihood of post-secondary education and/or training, and favorable health for the student's remaining years. This is especially true for students who are already of low SES. When placed in this context, it stands to reason that increasing the number of students of low SES that pursue post high school plans could serve as an important contributor to the elimination of health disparities.

Predictors of a high school student's decision to pursue post high school plans have mainly focused on the effects of financial, academic, family and social factors. This paper will differ by assessing how behavioral and health risk factors, in addition to family and social support, affect a student's decision to pursue post high school plans.

Background:

SES and Health

When compared to their higher SES counterparts, lower SES persons experience higher burdens of chronic health conditions, higher rates of the uninsured, poorer quality of care and poorer health outcomes. National data reveal heavier burdens of chronic disease among adults that earn relatively less or are less educated. Results from the 2007 Behavioral Risk Factor

Surveillance System (BRFSS) showed that the likelihood of an adult stating that their health was fair or poor decreased as income and educational status increased (2). In addition, the likelihood of an adult responding that they currently had asthma, diabetes, some form of cardiovascular disease, or were obese decreased as income and educational status increased (2).

National data also have shown disparities in health insurance coverage by education and income. Trends in the 2007 BRFSS showed that the percentage of adults with health insurance increased as income and educational status increased (2). Among adults ages 18 and over, the percentages of college graduates and those with less than a high school education with any kind of health insurance were 93.9% and 69.8% respectively. For persons earning at least $50,000 a year or less than $15,000 a year, the percentages, respectively, were 95.2% and 68.4% (2). Data from the College Board substantiated these findings. The 2007 edition of "Education Pays: The Benefits of Higher Education for Individuals and Society" noted that the disparity in the proportion of college graduates versus high school graduates receiving employer-provided health insurance increased from 9 to 16 percentage points from 1980 to 2005 (1). The implications are that those persons most likely to be burdened by various chronic ailments may not have the appropriate medical coverage and resources to properly manage their conditions.

There is evidence that suggests SES influences the type and timeliness of care received by patients. In a study by Bernheim assessing how a patient's SES influences a physician's clinical management decisions, physicians admitted having to tailor their course of action to accommodate a patient's circumstances. Adjustments included prescribing less expensive medications, avoiding specialist referrals, and postponing testing. Though these alterations were made in the patient's best interest, these modifications may affect health outcomes (3). Disparities in care related to SES are also evident in national data. Data from the National Healthcare Disparities Report showed that poor women over 40 years of age were less likely than their high-income counterparts to be screened for breast cancer, to receive effective diabetes management, to receive exercise counseling if they were obese, or to receive general medical care

as soon as they wanted for any injury or illness. The disparities for diabetes management and exercise counseling also existed by educational status. In addition, the percent of individuals that had a usual source of care or a usual primary care provider increased as educational status and income level increased (4). Finally, lower SES has also been associated with poorer patient outcomes. A study assessing outcomes by SES in seriously ill patients found that after controlling for age, ethnicity, co-morbidities, acute illness severity, and accessibility to services, patients of the lowest SES group experienced higher long-term mortality when compared to their high SES counterparts (5).

While the conclusion that individuals of low SES have poorer health than their high SES counterparts is apparent, the mechanism by which education and income affect health is not always clear. While higher educational status and higher income often show independent associations with health, their relative importance, and the underlying dynamic between the two, is less obvious. In a study assessing the effects of education, income, and their interaction on health, Schnittker (6) discovered that increases in education reduced the strength of the association between income and health, and that the effects of education on health were greatest among those with the lowest levels of income. Schnittker asserted that by not assessing the interaction of education and income on health, one can overestimate the effects of income and underestimate the effects of education. Other research has shown that the direct effect of education on health has decreased across age and cohort groups, while the indirect effect of education through income has increased (7). Regardless of how the dynamics of education and income affect health, one notion remains clear: by pursuing post high school plans students are putting themselves on a better trajectory for good health through the effects of higher educational status and/or higher income. This could especially be true for students of low SES, since individuals with lower income and lower educational status suffer from higher burdens of morbidity and mortality.

Disparities in post high school plans by socioeconomic status

Though students of lower SES are in a position to benefit greatly by pursuing post high school plans, data suggest that this population defers or delays college enrollment more than their higher SES counterparts. Data from the National Center for Education Statistics showed that from 1996 to 2006, the percentage of students completing high school who were immediately enrolled in college upon the October immediately following high school graduation decreased as family income level decreased (8). Research assessing predictors of delayed college enrollment found a similar trend for SES. As SES increased, so did the likelihood of enrolling immediately and delaying enrollment versus not enrolling at all (9). Interestingly, this study also found that the student's perceived importance of college cost and financial aid, nor the average two-year college tuition in the student's state, varied significantly by timing of enrolment (9). It stands to reason that the disparity of enrollment by socioeconomic status cannot be fully explained by financial factors alone.

Predictors of post high school plans

In light of the positive outcomes associated with higher levels of education and income, and the impact post high school plans can have on these factors, the importance of looking at predictors of post high school plans becomes apparent. By identifying factors associated with post high school plans, steps can be taken at the policy level, and school and home environments, to assure that students are placed in the best possible position to solidify their futures. In addition, it may be discovered that current programs and interventions aimed at today's youth may have the added benefit of increasing the student's likelihood of pursuing post high school plans.

Research has identified factors associated with the college enrollment of high school students. Positive parental involvement, academic performance, reading scores, a high number of financial aid contacts, higher maternal expectations, and magnet or private high school attendance have all been associated with an increased likelihood of college enrollment and attendance (9, 10, 11).

Peer influences, more specifically having friends that plan to enroll in a four-year college, have been shown to increase the probability of a student enrolling in any kind of post-secondary education among students of low SES (12). Low maternal education, being on welfare by age 4, and any juvenile arrest by age 18 have all been shown to decrease the likelihood of a student having any college or 4-year college attendance (11).

In a study of the National Comorbidity Survey, Kessler and colleagues assessed the impact of psychiatric disorders on educational attainment. They found that the presence of anxiety disorders, conduct disorders, and substance abuse disorders were associated with increased odds of failure to enter college among high school graduates. Individuals with a substance abuse disorder were twice as likely as those without one not to enroll in college. When applying the results to the US population, the study estimated that approximately 3.53 and 4.29 million more people in the 1990 US population would have graduated high school and college respectively if not for these psychiatric disorders (13). Research identifying factors that predict educational attainment among children born in the inner city found that the avoidance of regular cigarette smoking up until 18 years of age was associated with higher odds of obtaining a high school degree or GED versus not obtaining these degrees (14).   Regarding psychopathology and college grades, Svanum discovered that after controlling for college admission test scores, substance abuse disorders were associated with lower semester grade point averages among students enrolled in a university (15).

While not much research has been done assessing the impacts of violence and physical health on a student's decision to pursue post high school plans, these factors have been shown to be associated with academic performance. Rosenthal examined the longitudinal relationships between exposure to chronic community violence during high school, psychological distress during college, and academic performance during the first three college semesters. He found that exposure to violence in high school was positively correlated with current psychological distress among college students, which, in turn, was positively correlated with dropping out of college

within the first three semesters (16). Research also has been done assessing the effects of violence in the neighborhood and school settings on measures of school performance. Bowen and colleagues found that school attendance and the avoidance of school behavioral issues increased as measures of danger decreased. Also, levels of exposure to danger had negative impacts on student's perceptions of their academic performance (17).

Review articles appraising the literature have found associations between chronic health conditions and various academic outcomes. The presence of chronic conditions such as diabetes, sickle cell anemia, epilepsy, and obesity has been associated with decreased cognitive and academic achievement (18, 19). In addition, a study assessing the relationship between absenteeism, academic performance and asthma status found an association between the presence of persistent asthma and increased absenteeism along with low scores on standardized tests (20). It should be noted that the association between persistent asthma and absenteeism was significant, while the association between persistent asthma and lower standardized test scores was not. The authors theorized that increased absenteeism among students with persistent asthma could be contributing to their lower standardized test scores.

In the current study, it is expected that the odds of a student pursuing post high school plans will decrease in the face of substance abuse, poor physical and mental health, exposure to violence and reduced family/social support. Relationships will be attenuated when all factors are analyzed together, however it is expected that the directions of the associations will remain the same while some factors will emerge as more predictive than others. Models are expected to differ based on SES due to potential differences in the prevalence and nature of the independent variables between the two groups.

Methods Section

The specific factors being assessed in relation to post high school plans are mental and physical health, family/social support, substance abuse, and exposure to, being a victim of, and/or participating in violent/aggressive behavior. Because the decision not to pursue post high school plans may be especially detrimental to low SES, the current study will stratify data by SES in an attempt to shed light on any differences exacerbated or modified by SES. Post high school plans were defined as attending a 4-year college or community college, or pursuing vocational training or military service. Students that stated they were probably or definitely not going to pursue college, vocational, or military training after high school were categorized as not having post high school plans.

To achieve the stated objectives, data from the Youth Behavior Component (YBC, nationally referred to as the Youth Risk Behavior Survey) of the 2007 Connecticut School Health Survey (CSHS) were analyzed. The YBC contains questions that collect demographic information about the student, as well as data on behaviors that contribute to unintentional injuries and violence, tobacco use, alcohol and other drug use, sexual behaviors that contribute to unintended pregnancy and sexually transmitted diseases (STDs) (including human immunodeficiency virus (HIV) infections), unhealthy dietary behaviors, and physical inactivity. The survey also collects data on general health status, protective factors, and the prevalence of overweight and asthma (21).

The YBC of the CSHS was administered in public high schools across Connecticut during the spring of the 2006-2007 school year. A two-stage cluster design was used to produce a representative sample of students in grades 9 through 12. All regular public schools containing grades 9, 10, 11, or 12 were included in the sampling frame. In the first stage, schools were selected systematically with a probability proportional to enrollment size in grades 9 through 12 using a random start. A total of 60 high schools were selected out of a possible 196; one school was ineligible, leaving 59 schools that were invited to participate. Of the 59 high schools, 46

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agreed to participate. In the second sampling stage for each participating school, all classes in a required subject or all classes meeting during a particular period of the day were included in the sampling frame. Systematic equal probability sampling with a random start was used to select classes from each school that participated in the survey. All students within a selected class were eligible to participate in the survey. Survey procedures were designed to protect the privacy of students by allowing for anonymous and voluntary participation (21). Once collected, Westat weighted the survey data. A weight has been associated with each questionnaire to reflect the likelihood of sampling each student and to reduce bias by compensating for differing patterns of non-response. A post-stratification adjustment factor was calculated based on grade, sex, and race/ethnicity distribution among Connecticut students. Therefore CSHS data are representative of all non-institutionalized, public high schools students in Connecticut. (21).

Information on a student's SES was not collected as part of the 2007 CSHS; measures of SES were added to the dataset by linking a school ID variable with data from the 2006-2007 Connecticut School Profiles and town data from the census website. Identities were kept anonymous. As a result, the current dataset contains information on the percentage of students eligible for free/reduced priced lunch, which was used as a proxy for students' SES. Students attending a school where 0 to <25% of the students were eligible for free or reduced priced lunch were placed in the high SES group, while students attending schools where 25% or more of the student population were eligible for free or reduced priced lunch were placed in the lower SES group.

Individual variables believed to be associated with a student's post high school plans were identified. Variables were categorized into 5 major domains: mental health, physical health, substance abuse, family/social support, and violence. Each domain contained multiple variables. The mental health domain contained 4 variables assessing a student's mood over the past 2 weeks, as well as suicidal ideation and suicide attempts. The physical health domain contained an obesity variable and a self-rating of health. The substance abuse domain consisted of

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3 variables assessing binge drinking, cocaine use, and marijuana use. The family/social support

domain contained 6 variables assessing time spent with family and other supportive adults, as

well as the student's perception of the love and support they receive from these individuals. The

violence domain contained 11 variables assessing whether students had been a victim of or

engaged in violent or aggressive behavior on or off school property. To avoid over-specification

in the model, one composite measure of each domain was created using SAS 9.1 for each level of

SES according to the following procedure: 1) For each variable within a domain, a simple logistic

model was constructed assessing whether that variable was significantly associated with post high

school plans. 2) Variables that were statistically significant in step one were used to construct the

domain composites. A response indicating a poor outcome for any variable within a domain

made the student positive for that domain's composite. Measuring positive for the mental health

composite indicates poor mental health; measuring positive for the physical health composite

indicates fair or poor physical health; measuring positive for the family/social support composite

indicate deficiencies in this area; measuring positive for the substance abuse composite indicates

the abuse of drugs or alcohol; and measuring positive for the violence composite indicates either

being a victim of, or engaging in violent or aggressive behavior. This process was repeated for

both levels of SES. Therefore, while both levels of SES have the same domains, the combination

of variables building the composite may differ across SES. Once composite measures were

created, multivariate logistic models assessing the association between the composite variables

and post high school plans were built for each level of SES. Final models also control for

gender, academic performance and grade. Academic performance was measured by a

dichotomous variable measuring the percentage of students that had described their grades as

mostly D's and F's during the past 12 months.

Results

Forty-six of the 59 sampled eligible schools participated; 2,086 of the 2,659 sampled

student's submitted questionnaires; and 2,072 questionnaires were usable for study. The school

response rate was 78%, and the student response rate was 78%, yielding an overall response rate

of 61% (21). For this analysis, 250 subjects were excluded for not answering the question about

post high school plans or declaring themselves undecided regarding post high school plans. The

final dataset for these analyses consisted of 1,822 respondents. Splitting the dataset by SES

resulted in 1,362 (72.3%) students in the high SES group, and 460 (27.7%) in the low SES group.

Demographic characteristics of each group are presented in Table 1.   Gender was evenly

distributed within both groups, however, the distribution of race differed by SES. The higher

SES group was predominantly white, while the lower SES group was more diverse. Blacks made

up the highest percentage of the lower SES group (34.8%) followed by whites (31.9%) and

Hispanics (28.9%). In regards to grade, the weighted proportion of 9th and 10th graders to 11th and

12th graders was 59.6% to 40.5% in lower SES students and 48.4% to 51.6% in higher SES

students.

Table 1: Demographics by SES group

	Lower SES		Higher SES	
	#	Weighted %	#	Weighted %
Gender				
Male	241	50.4	690	49.7
Female	216	49.6	666	50.3
Race				
White, non-Hispanic	127	31.9	1112	87.1
Black, non-Hispanic	117	34.8	35	3.3
Hispanic/Latino	166	28.9	105	6.3
Multiple races	13	1.5	38	1.3
All other races	26	3.0	51	2.0
Grade				
9th	130	31.8	316	23.5
10th	138	27.8	407	24.9
11th	107	20.4	361	27.8
12th	79	20.1	260	23.8

*Note that the percentages presented in the table are weighted percentages and do not necessarily
equal the percentage of the un-weighted frequencies.

To help assess the difference in SES between the two groups, SES measures from the 2000 census were analyzed for the SES groups in this study. The results can be found in Table 2. The mean median family income of the schools' towns was $26,205 less in the low SES group versus the high SES group. The mean percentage of children in the schools' towns below the federal poverty line in the year 2000 was 20.6% in the low SES group versus 5.2% in the high SES group. In Table 3, it should be noted that students in the low SES group were more likely than students in the high SES group to respond that they probably or definitely will not pursue post high school plans (19.9% versus 14.2%, p-value=0.008).

Table 2: 2000 census measures by SES groups

	Lower SES (95% CI)	Higher SES (95% CI)
Mean median family income of the school's town	$48,761 (48,368-49,155)	$74,966 (74,704-75,228)
Mean percentage of children in the school's town below the federal poverty line in the year 2000	20.6% (20.2-20.9)	5.2% (5.1-5.2)

Table 3: Post high school plans by SES groups

Post High school Plans	SES	Frequency	Weighted Percent	95% Confidence Limits
Probably or Definitely will not pursue	High	187	14.2%	12.2-16.1
	Low	87	19.9%	15.7-24.2

Results of the simple logistic regressions for individual variables for both levels of SES can be found in Tables 4 and 5 (Frequencies for each question by SES can be found in Appendix A). For students of high SES, all of the mental health variables, 5 of the 6 family/social support variables and 9 of the 11 violence variables were significantly associated with a student's decision to pursue post high school plans. In addition, students who described their health as fair or poor (OR: 2.23) and students that had used cocaine in the past 30 days (OR: 3.38) were more likely than students that did not to be doubtful for post high school plans.

Among students of lower SES, the associations between the mental health and physical health variables and post high school plans were not statistically significant. Among the family/social support variables, students that stated their family rarely/never know where they are when they are not home were at higher odds than students that did not of being doubtful for post high school plans (OR: 2.54), while feeling comfortable seeking help from an adult other than their parents seemed to have a protective effect (OR: 0.49). Surprisingly, students that usually spent 3+ hours after school without an adult had lower odds than those that did not of being doubtful for post high school plans (OR: 0.29) . Among the violence variables, students that had been injured in a fight and had to be treated in the past 12 months were 5 times more likely than students that had not to be doubtful for post high school plans. In addition, carrying a weapon, missing school in the past 30 days because of feeling unsafe, and being forced to have sex all put students at higher odds than their reference groups of being doubtful for post high school plans. Finally low SES students that had used cocaine in the past 30 days were approximately 7 times more likely than students that did not to be doubtful for post high school plans.

Table 4: Crude odds ratios of affirmative response to survey questions among students classified as high SES; reference group= No

	OR	95% Confidence Limits
Mental Health		
Sad/Hopeless everyday for 2 weeks or more past 12 mo	1.50	1.03-2.19
Considered suicide past 12 months	1.77	1.15-2.72
Suicide Plan past 12 months	2.20	1.38-3.52
Suicide Attempt past 12 months	2.19	1.35-3.56
Physical Health		
Student overweight	1.14	0.69-1.88
Students describes health as fair/poor	2.23	1.34-3.71
Substance Abuse		
Binge drinking past 30 days	1.03	0.72-1.48
Marijuana use past 30 days	1.43	1.00-2.05
Cocaine use past 30 days	3.38	1.79-6.38
Family, Social Support		
Never/rarely get help they need	1.50	1.04-2.16
Had meal w/family on 3+days in past 7	0.34	0.25-0.48
Usually spend 3+hrs after school w/o adult	0.81	0.58-1.12
Feel comfortable seeking help from adult other than parents	0.39	0.27-0.56
Parents/fam rarely/never know where they are when not home	5.91	3.87-9.03
Agree family loves and supports them	0.54	0.35-0.83
Violence		
Carried weapon past 30 days	2.84	1.97-4.09
Carried weapon on school property past 30 days	3.34	1.90-5.86
Missed school in past 30 because they felt unsafe	1.62	0.89-2.94
Threatened/injured with weapon school property past 12 months	2.66	1.63-4.34
Victim of vandalism on school prop past 12 months	1.19	0.85-1.69
Physical fight 12 months	2.20	1.56-3.10
Injured in fight and had to be treated past 12 months	3.75	1.85-7.62
Fight school property past 12 months	2.61	1.66-4.10
Intentionally hurt by bf/gf past 12 months	2.46	1.63-3.71
Ever forced to have sex	2.43	1.50-3.94
Harassed/bullied on school property	1.52	1.06-2.19

*High SES: attend school where <25% of student body eligible for free/reduced lunch
** 95% confidence limits are for odds ratios

Table 5: Crude odds ratios of affirmative response to survey questions among students classified as low SES; reference group= No

	OR	95% Confidence Limits
Mental Health		
Sad/Hopeless everyday for 2 weeks or more past 12 mo	0.72	0.39 -1.33
Considered suicide past 12 months	1.36	0.68 - 2.75
Suicide Plan past 12 months	1.31	0.61 - 2.83
Suicide Attempt past 12 months	1.52	0.66 - 3.53
Physical Health		
Student overweight	0.73	0.35 - 1.55
Students describes health as fair/poor	1.81	0.81 - 4.04
Substance Abuse		
Binge drinking past 30 days	1.16	0.61 - 2.18
Marijuana use past 30 days	1.40	0.74 - 2.67
Cocaine use past 30 days	7.11	2.34 - 21.60
Family, Social Support		
Never/rarely get help they need	1.40	0.77 - 2.53
Had meal w/family on 3+days in past 7	0.85	0.50 - 1.44
Usually spend 3+hrs after school w/o adult	0.29	0.15 - .54
Feel comfortable seeking help from adult other than parents	0.49	0.28 - .87
Parents/fam rarely/never know where they are when not home	2.54	1.36 - 4.77
Agree family loves and supports them	0.76	0.39 - 1.49
Violence		
Carried weapon past 30 days	2.44	1.30 - 4.57
Carried weapon on school property past 30 days	2.50	1.09 - 5.76
Missed school in past 30 because they felt unsafe	2.91	1.15 - 7.39
Threatened/injured with weapon school property past 12 months	1.48	0.64 - 3.45
Victim of vandalism on school prop past 12 months	1.36	0.78 - 2.39
Physical fight 12 months	1.22	0.70 - 2.14
Injured in fight and had to be treated past 12 months	5.05	2.04 - 12.48
Fight school property past 12 months	2.12	0.99 - 4.56
Intentionally hurt by bf/gf past 12 months	1.51	0.76 - 3.02
Ever forced to have sex	3.23	1.49 - 7.00
Harassed/bullied on school property	1.04	0.56 - 1.96

*Low SES: Attend school where ≥25% of student body eligible for free/reduced lunch
** 95% confidence limits are for odds ratios

Unless otherwise noted, variables that were found to have significant associations with post high school plans were entered into composites (A list of variables included in the composites by SES can be found in Appendix B). Among lower SES students, none of the mental or physical health variables were statistically significant. However, measures of mental and physical health were desired for the final model to see if their presence attenuated the effects of the other variables. Therefore, composites of mental and physical health were made for low SES students using the variables that put them at an increased risk, although not statistically significant, of being doubtful for post high school plans. This included students that had considered, planned, or attempted suicide, and students who described their health as fair or poor. In addition, because spending 3+ hours after school without an adult present had a surprising protective effect among low SES students, this variable was kept out of the low SES composite for reduced family/social support. The frequencies of students positive for each composite by SES can be found in Table 6. Among both levels of SES, over half of the students were positive for the reduced family/ social support and violence composites. Both levels of SES showed the same proportion of students meeting criteria for substance abuse, while lower SES students showed a higher proportion of students meeting criteria for poor mental health (38.5% versus 30.2%).

Table 6: Frequency of Composite Variables by SES

	High SES		Low SES	
	#	%	#	%
Poor Mental Health	410	30.2	178	38.5
Substance Abuse	53	4.6	17	4.8
Fair/Poor Physical Health	100	7.2	47	10.0
Reduced Family/Social Support	774	57.1	323	71.7
Violence	751	55.2	277	59.2

Crude odds ratios of the composites can be found in Table 7. Among high SES students, all of the composites were significantly associated with post high school plans. Students meeting the criteria for substance abuse and violence were approximately 3 times more likely than those that did not to be doubtful for post high school plans (OR: 3.38, 2.96 respectively). Students meeting the criteria for reduced family/support (OR: 2.46), poor or fair physical health (OR: 2.23), and poor mental health (OR: 1.72) were approximately twice as likely as those that did not to be doubtful for post high school plans.

Among low SES students, those that met the criteria for substance abuse were 7 times more likely than students that did not to be doubtful for post high school plans (OR: 7.11). Students meeting the criteria for violence or reduced family/social support were approximately 3 times (OR: 3.00) and twice as likely (OR: 2.25) than those that did not to be doubtful for post high school plans respectively.

Table 7: Crude odds ratios for composite variables by SES

High SES		
	OR	95% Confidence Limits
Poor Mental Health	1.72	1.23 - 2.41
Substance Abuse	3.38	1.79 - 6.38
Fair/Poor Physical Health	2.23	1.34 - 3.71
Reduced Family/Social Support	2.46	1.72 - 3.53
Violence	2.96	2.04 - 4.28
Low SES		
Poor Mental Health	1.42	0.77-2.61
Substance Abuse	7.11	2.34-21.6
Fair/Poor Physical Health	1.81	0.81-4.04
Reduced Family/Social Support	2.25	1.31-3.88
Violence	3.00	1.76-5.12

* 95% confidence limits are for odds ratios

Final multivariate logistic models are shown in the final column of Tables 6 and 7. Composite variables were entered into the model based on the p-value of the variable in crude analysis. Variables were entered in the order of ascending p-values. In addition to the composites, final models control for sex, grade, and academic performance. These variables were entered together after the last composite variable was entered. Among higher SES students, when controlling for all composites, only reduced family/social support and violence remained significantly associated with post high school plans. This held true when adding sex, grade, and academic performance (violence OR: 2.02; family social support OR: 1.86). In regards to sex, males were more likely than females to be doubtful for post high school plans (OR: 1.93). In regards to grade and academic performance, the odds of students being doubtful for post high school plans decreased as grade increased (OR: 0.74). As expected, students that described their grades in the past 12 months as mostly D's and F's were over twice as likely as students that did not to be doubtful for post high school plans (OR: 2.39). The Likelihood ratio test for the high SES model was large and significant (p-value <0.0001), indicating that the presence of the independent variables improved our ability to predict the dependant variable.

Among lower SES students, when controlling for all composites, substance abuse, violence, and reduced family/social support emerged as the variables that were significantly associated with post high school plans. After controlling for sex, grade, and academic performance the associations of violence (OR: 2.25), reduced family/social support (OR: 2.20), and substance abuse (OR: 4.59) to post high school plans remained statistically significant. In addition, students that reported their grades as being mostly D's and F's in the past 12 months were almost 7 times more likely than students that did not to be doubtful for post high school plans (OR: 6.76). The Likelihood ratio test for the low SES model was statistically significant (p-value<0.0001).

Table 7: Multivariate model: High SES

	OR		OR		OR		OR		OR		OR
Violence	2.96**	Violence	2.61**	Violence	2.46**	Violence	2.40**	Violence	2.36**	Violence	2.02*
		Reduced Fam/Soc Suppt.	2.09**	Reduced Fam/Soc Suppt.	1.99*	Reduced Fam/Soc Suppt.	1.90*	Reduced Fam/Soc Suppt.	1.84*	Reduced Fam/Soc Suppt.	1.86*
				Subst. Abuse	2.19*	Subst. Abuse	2.06*	Subst. Abuse	1.86	Subst. Abuse	1.97
						Poor Mental Health	1.23	Poor Mental Health	1.18	Poor Mental Health	1.35
								Fair/ Poor Health	1.50	Fair/ Poor Health	1.41
										Sex	1.93*
										Grade	0.74*
										Acad. Perf	2.39*

*p-value <0.05
**p-value <0.0001

Table 8: Multivariate model: Low SES

	OR		OR		OR		OR		OR		OR
Violence	3.00**	Violence	2.46*	Violence	2.37*	Violence	2.35*	Violence	2.41*	Violence	2.25*
		Subst. Abuse	4.95*	Subst. Abuse	4.21*	Subst. Abuse	4.09*	Subst. Abuse	4.04*	Subst. Abuse	4.59*
				Reduced Fam/Soc Suppt.	2.20*	Reduced Fam/Soc Suppt.	2.24*	Reduced Fam/Soc Suppt.	2.33*	Reduced Fam/Soc Suppt.	2.20*
						Fair/ Poor Health	1.74	Fair/ Poor Health	1.78	Fair/ Poor Health	1.40
								Poor Mental Health	0.80	Poor Mental Health	0.67
										Sex	1.08
										Grade	0.82
										Acad. Perf	6.76**

**p-value <0.05
**p-value <0.0001

Discussion

The current study showed that students of low SES were more likely than their high SES counterparts to be doubtful for post high school plans. After controlling for sex, grade, and academic performance, cocaine abuse emerged as the risk factor that put low SES students at the highest odds of not pursuing post high school plans, followed by some form of involvement in violent/aggressive behavior, and receiving less family/social support than others in their peer group. Similar findings regarding violence and family/social support were found in the high SES group, however, findings regarding substance abuse in the high SES group were not statistically significant. Mental and physical health did not show independent effects on post high school plans in either group after controlling for other factors.

Choosing the percentage of the student body eligible for free or reduced price meals as a proxy for SES appeared to serve its purpose for the current study. In regards to the 2000 census measures, definite differences were found between the low SES group and high SES group in regards to mean median family income of the schools' towns and the mean percentage of children in the schools' towns below the federal poverty line. Also, the low SES group showed much higher proportions of black and Hispanic students, and a lower proportion of white students than the high SES group.

The findings of the current study, in regards to post high school plans, are consistent with research conducted by Rowan-Kenyon as well as national data from the NCES. While national data and the Rowan-Kenyon study (9) showed that students of low SES are less likely than their high SES counterparts to enroll in college and/or more likely than their high SES counterparts to delay enrollment, the current study shows that a disparity by SES regarding an aversion of post high school plans exists while the student is in high school.

While the current study does not answer why some students choose not to pursue post high school plans, or why a disparity exists by SES, it does shed light on possible factors beyond SES and academics that are associated with these dynamics. Among lower SES students,

substance abuse, more specifically, using cocaine in the 30 days prior to taking the survey, emerged as the behavior that put students at the highest odds of being doubtful for post high school plans. The Kessler study (13) found that students with substance abuse disorders were twice as likely as those without one not to enroll in college. In the current study, low SES cocaine abusers were almost 5 times as likely as non-cocaine abusers to be doubtful for post high school plans. Interestingly, though the prevalence of cocaine use was equal among both samples, the association to post high school plans was not statistically significant among high SES students.

For high SES students, violence emerged as the factor that put students at the highest odds of being doubtful for post high school plans. In low SES students violence emerged as the second most influential factor after substance abuse. The percentage of students meeting the criteria for violence and the increased odds of being doubtful for post high school plans were slightly higher, but similar, in the low SES group compared to the high SES group. The makeup of the violence composite between the two levels of SES differed, suggesting that the dynamic between violence and post high school plans are not the same between groups. Crude analysis showed that among high-SES students, post high school plans appeared to be discouraged by more forms of violence when compared to the low SES group. More specifically, all physical fights and bullying were associated with post high school plans in the high SES group. Harassment/bullying had no affects on post high school plans in the low SES group, while only fights where the student had to be treated for injury emerged as statistically significant. A possible explanation for this is that low SES students are desensitized to more forms of violence than high SES students. The findings of the current study add to previous research assessing the effects of exposure to violence on school performance, showing that this negative association may extend to student's future plans. It should be noted that while youth violence is usually an issue associated with low-income, inner-city environments, the current study suggests that it may be an issue for high SES students as well. The two SES groups showed surprisingly similar

percentages of students carrying weapons and participating in, or being victims of, aggressive behavior.

Finally, reduced family/social support was significantly associated with post high school plans in both groups. In general, results were consistent with previous research showing that positive family/social support is associated with an increased likelihood of college enrollment (10,11,13). A much higher proportion of low SES students than high SES students appeared to experience a lack of support. The increased odds of being doubtful for post high school plans due to deficiencies in support were slightly higher but similar in the low SES group versus the high SES group. As with the violence variable, the make-up of the reduced family/social support composite was not the same between groups. Intentions to pursue post high school plans appeared to be affected by more examples of family/social support in high SES students when compared to low SES students. In crude analysis, never/rarely getting needed help, eating meals with family, and feeling loved and supported by family had statistically significant associations with post high school plans among high SES students, but not low SES students. It is possible that the widespread nature of reduced family/social support among low SES students has resulted in desensitization to these items. Interestingly, among low SES students, spending time after school without an adult appeared to have encouraging affects on pursuing post high school plans. A possible explanation for this is a surplus of negative adult role models in the lives of lower SES students, thus leading to a positive affect of spending time alone.

In the higher SES group, mental and physical health showed statistically significant associations with post high school plans in crude analysis. These results are consistent with previous research showing similar findings (14,19,20). The findings concerning physical health are interesting in this context, because they insinuate that fair or poor physical health is associated with lack of plans that can improve future SES, which impacts future physical health, thus creating an unfortunate cycle. However, in final multivariate analysis these variables did not remain statistically significant, and did not have independent affects on post high school plans. In

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the lower SES group, neither the mental health nor physical health variables were statistically significant in crude or multivariate analysis.

Limitations of the data:

As stated earlier, the CSHS did not have any measure of SES. The percentage of free or reduced meals was used as a proxy for SES, and was double-checked against census measures of the school's town. How valid of a measure this provides of the SES of the individual student is unknown. It would be beneficial if future versions of the CSHS contained questions regarding the SES of the student's family.

The CSHS was not designed for the purpose of constructing the composite measures used in this study. The validity of these composite measures is unknown. The violence and reduced family/social support composites in particular are broad and contain many facets of the dynamic they are trying to assess. In the violence factor for example, it is difficult to assess whether an individual student is a perpetrator or victim, has an aggressive personality, or is afraid and trying to defend oneself. Also, the variable contains measures of dating violence and sexual abuse, which may have different effects on a student than being threatened or injured with a weapon.

It should also be noted that post high school plans as defined in the CSHS, refers to enrolling in a 2 or 4 year college, receiving vocational training, or joining the military. It is possible that the characteristics of students differ by the choice of post high school plans. For example, the population of students that choose to attend a 4-year college may differ significantly from the population of students that choose to join the military. As a result, it is possible that looking at these options separately would provide more in-depth information.

Next Steps/Conclusions

The current study suggests that there are factors beyond academics that influence a high school student's plans for their future. More specifically, students that are abusing cocaine or are victims/participants of violent or aggressive behavior are at increased odds of being doubtful for post high school plans. Preventing cocaine use among low SES students may be of particular

importance. This study reinforces the benefit of substance abuse and violence prevention programs for high school age students. These prevention programs may have the added benefit of increasing the likelihood that high school students will make plans that could impact their future SES. Violence prevention measures should be tailored to the forms and severity of violence most relevant to the target group. Consistent with previous research, adequate family and social support emerged as an encouraging factor for post high school plans. Deficiencies in the amount and quality of family and social support received exists in both groups, but are much more wide spread in the low SES group. Positive family involvement, but also the influence of positive role-models outside of the family, can have positive effects on a student's decision to pursue post high school plans.

Future research in this area should focus in more depth on the factors of violence, reduced family/social support, and substance abuse, and their relationship to post high school plans. Validated measures of these factors should be used, and more specific definitions of post high school plans should be utilized. Information obtained should provide information that can help tailor prevention and mentoring programs for high school aged youth. If possible, longitudinal research should be conducted to assess the general concept of the theoretical framework outlined in this study. That is, prevention contributes to better odds of high school students making plans for their futures, which can lead to higher SES and thus better health as an adult.

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Appendices

Appendix A: Frequencies of individual questions by SES

Mental Health	SocEc Status	Frequency	Weighted Percent	95% Confidence Limits
Sad/ Hopeless everday for 2 weeks or more past 12 mos	high	276	20.8	18.4 - 23.1
	low	129	28.3	23.7 - 33.0
Considered suicide past 12 mos	high	165	12.3	10.5 - 14.1
	low	70	15.0	11.3 - 18.7
Suicide Plan past 12mos	high	121	9.1	7.5 - 10.8
	low	60	12.6	9.2 - 16.0
Suicide Attempt past 12mos	high	118	8.6	7.0 - 10.2
	low	47	9.7	6.7 - 12.7
Physical Health				
Student overweight	high	137	10.8	8.9 - 12.6
	low	72	16.8	12.8 - 20.8
Students describes health as fair/poor	high	100	7.2	5.8 - 8.7
	low	47	10.0	7.0 - 13.0
Substance Abuse				
Binge Drinking past 30 days	high	389	31.0	28.4 - 33.7
	low	76	16.7	13.1 - 20.3
Marijuana use past 30 days	high	326	25.5	23.0 - 28.0
	low	85	19.1	15.0 - 23.1
Cocaine use past 30 days	high	53	4.6	3.3 - 5.9
	low	17	4.8	2.6 - 7.0
Family/Social Support				
Never/rarely get help they need	high	323	25.2	22.7 - 27.7
	low	125	31.2	26.2 - 36.2
Had meal w/family on 3+days in past 7	high	938	67.9	65.3 - 70.5
	low	252	53.6	48.4 - 58.7
Usually spend 3+hrs after school w/o adult	high	586	44.1	41.3 - 46.9
	low	179	39.6	34.7 - 44.5
Feel comfortable seeking help from adult other than parents	high	1080	79.3	77.0 - 81.6
	low	342	75.0	70.6 - 79.5
Parents/fam rarely/never know where they are when not home	high	125	9.9	8.2 - 11.7
	low	77	17.2	13.4 - 21.1
Agree family loves and supports them	high	1180	87.5	85.6 - 89.3
	low	370	82.6	78.7 - 86.4

Violence	SocEc Status	Frequency	Weighted Percent	95% Confidence Limits
Carried weapon past 30 days	high	221	16.2	14.2 - 18.2
	low	75	15.5	11.9 - 19.1
Carried weapon on school property past 30 days	high	67	4.8	3.7 - 6.0
	low	30	5.8	3.7 - 8.0
Missed school in past 30 because they felt unsafe	high	70	5.6	4.3 - 6.8
	low	28	5.3	3.1 - 7.5
Threatened/injured with weapon school property past 12 mos	high	97	7.1	5.6 - 8.5
	low	43	8.4	5.6 - 11.2
Victim of vandalism on school prop past 12 mos	high	379	28.2	25.7 - 30.8
	low	137	27.6	23.1 - 32.1
Physical fight 12 mos	high	385	28.4	25.9 - 30.9
	low	156	35.0	30.1 - 39.9
Injured in fight and had to be treated past 12 mos	high	42	3.0	2.1 - 4.0
	low	26	6.3	3.6 - 8.9
Fight school property past 12 mos	high	132	9.6	7.9 - 11.3
	low	50	11.8	8.4 - 15.1
Intentionally hurt by bf/gf past 12 mos	high	175	13.4	11.5 - 15.4
	low	62	12.5	9.4 - 15.7
Ever forced to have sex	high	114	8.9	7.2 - 10.5
	low	43	9.9	6.8 - 13.1
Harassed/Bullied on school property	high	349	28.7	26.0 - 31.4
	low	109	26.5	21.7 - 31.3

Appendix B: Questions included in composites by SES

Mental Health	High SES	Low SES
Sad/Hopeless everyday for 2 weeks or more past 12 months	x	
Considered suicide past 12 months	x	x
Suicide Plan past 12 months	x	x
Suicide Attempt past 12 months	x	x
Physical Health		
Student Overweight		
Students describes health as fair/poor	x	x
Substance Abuse		
Binge Drinking past 30 days		
Have used marij past 30 days		
Cocaine use past 30 days	x	x
Family, Social Support		
Never/rarely get help they need	x	
Had meal w/family on 3+days in past 7	x	
Usually spend 3+hrs after school w/o adult		
Feel comfortable seeking help from adult other than parents	x	x
Parents/fam rarely/never know where they are when not home	x	x
Agree family loves and supports them	x	
Violence		
Carried weapon past 30 days	x	x
Carried weapon on school property past 30 days	x	x
Missed school in past 30 because they felt unsafe		x
Threatened/injured with weapon school property past 12 mos	x	
Victim of vandalism on school prop past 12 mos		
Physical fight 12 mos	x	
Injured in fight and had to be treated past 12 mos	x	x
Fight school property past 12 mos	x	
Intentionally hurt by bf/gf past 12 mos	x	
Ever forced to have sex	x	x
Harassed/Bullied on school property	x	